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Modelling Early Regeneration Processes in Mixed-Species Boreal Forests of Alberta
1999 – Update

August 1999

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Progress Report on the 1999 Summer Field Season

For the Project Entitled

Modelling Early Regeneration Processes in Mixed-Species Boreal Forests of Alberta

Funded by the Manning Diversified Products Research Trust Fund and Administered by Alberta Environmental Protection

Implemented Under

The EMEND umbrella to determine how the harvest and regeneration of upland, mixedwood forests can best approximate natural disturbance in northwestern Alberta

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Justification for Change in the Proposed Work Schedule

A change in host institution for the Principal Investigator (PI) and a later notification of approved funding for the project then anticipated necessitated a modification to the initial proposal work schedule. The PI was unable to recruit a graduate student, complete all field installations, and commence the seed sowing and monitoring portion of the experiment as planned. In order to collect valuable data during a potentially good seed year for spruce, the PI in collaboration with others (see below) made the decision to install seed traps in all control plots in 3 forest cover types (predominantly aspen, mixed aspen & spruce, no conifer understory, and predominantly spruce). This design was modified further after collaboration with Dr. Jim Stewart of the Canadian Forest Service (see below) to omit 2 control stand having access limitations (Compartment H) and install these seed traps in mixed wood stands having 50% and 75% retention of overstory. The project is slightly behind the original work schedule presented in the funded proposal. The original completion date for the project is still feasible.

Work Completed

The PI for the project, DW Gilmore, and an assistant, KL Haiby, installed 53 seed collection traps in 3 forest cover types (Table 1) during the July 14-17, 1999 time period. A descriptive location of the seed trap locations is provided in the accompanying file (Fieldsum1). Data loggers that record soil temperature (at a 15 cm depth) and surface temperature were installed in 6 combinations of cover types and treatments to compliment the seed sowing portion of the study to be initiated in 2000.

Table 1. Rep numbers for each cover type and treatment in which seed collection traps were installed during July 1999.

Cover type	Treatment	Reps Installed	No. traps installed
Aspen dominated	Control	1, 2, 3	17 (one defective trap)
Mixed wood	Control	2, 3	12
Mixed wood	50% retention	1	6
Mixed wood	75% retention	1	6
Conifer dominated	Control	1, 2	12

* HoboPro temperature data loggers installed within these reps.

Collaborations initiated

Initial collaborating scientists on this project were John Spence of the University of Alberta and Jan Volney of the Canadian Forest Service. Several collaborations germane to this project have been developed between the PI and other scientists since the submission of the original proposal.

John Zasada of the USDA Forest Service reviewed the modified work schedule and provided numerous useful suggestions. Dr. Zasada has provided in-kind support through the USDA Forest Service by providing personnel to assist in seed trap construction. He will provide additional in-kind support in 2000 through assistance in personnel for seed trap construction and funding his own travel costs to visit the EMEND field sites.

Jim Stewart will provide in-kind support in 1999 through the collection of seed material in the seed traps prior to snowfall in October. The PI and Dr. Stewart have exchanged proposals for their work at EMEND and we anticipate increased collaboration as both of our projects progress. In brief, my study focuses on natural regeneration following harvest and Jim's study focuses on natural regeneration following harvest and site prep. Another distinction between the 2 studies is my study examines regeneration of all species while Jim's focuses on spruce.

Additional collaborative ties are anticipate with Graham Hillman of the Canadian Forest Service whom is collecting soil temperature data in connection with his work at EMEND.

Fall Collection

Fall collection from the seed traps is scheduled for October of this year. Jim Stewart and John Spence have agreed to assist in this effort. Data to be collected when the traps are emptied are: date of collection, trap condition before collection, and trap condition after collection. Traps needing repair will be attended to in May of 2000. Materials collected will be bagged and shipped to the PI.

Year 2000 Work Plan

Seed traps designed to capture aspen seed will be installed within all treated stands plus controls in late-May to early-June of 2000 and monitored weekly. The full complement of conifer seed collection traps will be installed. The seed sowing/monitoring component of the study will be initiated.

Analysis

Collected data will be analyzed for trends and an interim report prepared prior to next field season.

Graduate student

A graduate student is currently be recruited to study under the PI at the University of Minnesota.

Initial EMEND Seed Trap Installations
July 14-17, 1999
By DW Gilmore & KL Haiby

Reps within cover types where seed collection traps were placed

ADOM	MIX	MX 50%	MX 75%	CDOM
Rep 1	Rep 2	Rep 1	Rep 1	Rep 1
Rep 2	Rep 3			Rep 2
Rep 3				

53 traps installed

Control Plot size, linear 40 m X 5 m plots

Compartment **A**
Cover Type **ADOM**
Stand **77**
Logging Number **852**
Treatment **CON**
Rep **1**
Date installed **July 17, 1999**

Plot	Seed trap location	Notes
P1	No trap	
P2	9 m S of Tree 1	Near tree with insect collection trap
P3	6 m N of Tree 1	
P4	6.5 m N of Tree 1	
P5	Trap 1 7 m S 20 W from Tree 2 Trap 2 approx. 3 m NW of end tree	Running short on time, 2 traps at this plot, 6th trap for installation was defective
P6	No trap	

Compartment **B**
Cover Type **ADOM**
Stand **66**
Logging Number **862**
Treatment **CON**
Rep **2**
Baseline **B04**
Date installed **July 17, 1999**

Plot	Seed trap location	Notes
P1	No trap	
P2	No trap	
P3	7 m N of Tree 1	
P4	7 m N of Tree 1	
P5	5 m S of Tree 1 4 m W of P5 end tree	2 traps in this plot, running short on field time, Hobo 6 installed, approx. 0.5 m N of trap, soil probe in 15 cm mineral soil, launched 12:10 pm locale, 1:10 pm CT
P6	7 m N of Tree 1 2 m W of P6 end tree	2 traps in this plot, running short on field time

Initial EMEND Seed Trap Installations
July 14-17, 1999
By DW Gilmore & KL Haiby

Compartment **C**
Cover Type **MX**
Stand **44**
Logging Number **867**
Treatment **CON**
Rep **3**
Baseline **E6**
Date installed **July 16, 1999, evening**

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Plot	Seed trap location	Notes
P1	6 m N of Tree 2	
P2	7 m N of Tree 1	
P3	8 m N 80 E of Tree 1	
P4	7 m S of Tree 1	Hobo 4 installed 1 m N of trap, soil probe 15 cm in mineral soil, launched 10:15 pm local time, 11:15 pm CT
P5	7 m S of Tree 1	
P6	6 m N of Tree 1	

Compartment **D**
Cover Type **MX**
Stand **29**
Logging Number **902**
Treatment **CON**
Rep **2**
Baseline **D12**
Date installed **July 16, 1999**

Plot	Seed trap location	Notes
P1	8 m N of Tree 1	
P2	7 m N of Tree 1	
P3	7 m N of Tree 1	
P4	7 m N of Tree 1	
P5	7 m N of Tree 1	
P6	7 m N of Tree 1	

Initial EMEND Seed Trap Installations
July 14-17, 1999
By DW Gilmore & KL Haiby

Compartment **D**
Cover Type **CDOM**
Stand **31**
Logging Number **889**
Treatment **CON**
Rep **1**
Baseline **D2**
Date installed **July 17, 1999**

Plot	Seed trap location	Notes
P1	7 m N of Tree 1	Wet location,
P2	7 m N of Tree 1	
P3	5.5 m N of Tree 1	
P4	7 m N of Tree 1	Hobo 5 installed approx. 1 m S of trap, prop down 15 cm at top of mineral soil, launched 9:20 am local/8:20 am CT
P5	7.5 m N of Tree 1	
P6	8 m N of Tree 1	

Compartment **G**
Cover Type **CDOM**
Stand **314**
Logging Number **918**
Treatment **Control**
Rep **2**
Baseline J1
Date installed **July 16, 1999**

Plot	Seed trap location	Notes
P1	7 M s OF Tree 1	Hobo 1 approx. 1.5 m N of trap, soil probe 15 cm into moss/duff layer. Prop placed beneath small root. Launched 8:45 am local/9:45 CT
P2	7 m S of Trees	
P3	8 m S 30 W of Tree 1	
P4	7 m N of Tree 1	
P5	7 m N of Tree 1	
P6	11 m S 20 E of Tree 1	

Initial EMEND Seed Trap Installations
July 14-17, 1999
By DW Gilmore & KL Haiby

Compartment G
Cover Type MX
Stand 303
Logging Number 911
Treatment 50% Residual
Rep 1
Base LineI2
Date installed July 16, 1999

Plot	Seed trap location	Notes
40 m	6.5 m S 30 W of stake	
100 m	7 m N 30 E of stake	
140 m	7 m N 30 E of stake	Roll 2, frames 13, 14
180 m	7 m N 30 E of stake	Hobo 3, approx 1 m S 30 W from trap, prop placed a 6" depth in mineral soil, launched 2:20 pm local/3:20 pm CT
220 m	9 m N 30 E of stake	
260 m	7 m N 30 E of stake	

Compartment G
Cover Type MX
Stand 303
Logging Number 912
Treatment 75% Residual
Rep 1
Base LineI3
Date installed July 16, 1999

Base Line Mark	Seed trap location	Notes
0 m	8 m N 40 E of stake	
60 m	7 m N 10 E of stake	Hobo 2 approx. 1 m N 10 E from trap, soil probe at 15 cm depth in organic humus, time not recorded
120 m	7 m N 10 E of stake	Attempted to place traps 90 degrees of
180 m	7 m N 10 E of stake	off baseline, not always possible
220 m	8 m N of stake	
260 m	4.5 m N 12 E of stake	

Initial EMEND Seed Trap Installations
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Compartment I
Cover Type ADOM
Stand 9481
Logging Number 940
Treatment Control
Rep 3
Date installed July 15, 1999

Plot	Seed trap location	Notes
P1	7 m N of Tree 1	near flag indicating Satellite Study, no activity observed
P2	7 m S of Tree 1	
P3	7 m N of Tree 1	
P4	7 m S of Tree 1	
P5	7 m N of Tree 1	
P6	9.5 m N of Tree 1	